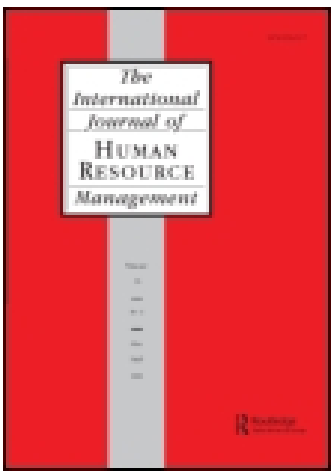
Leadership and innovation: relations between leadership, individual characteristics and the functioning of R&D teams.

Stoker, Janka; Looise, JC; Fisscher, O.A.M.; De Jong, R.D.

Published in:
International Journal of Human Resource Management

DOI:
10.1080/09585190110068359

Publication date:
2001



The International Journal of Human Resource Management

Publication details, including instructions for authors and subscription information: http://www.tandfonline.com/loi/rijh20

Leadership and innovation: relations between leadership, individual characteristics and the functioning of R&D teams

J. I. Stoker , J. C. Looise , O. A. M. Fisscher & R. D. De Jong

Published online: 09 Dec 2010.

To cite this article: J. I. Stoker , J. C. Looise , O. A. M. Fisscher & R. D. De Jong (2001) Leadership and innovation: relations between leadership, individual characteristics and the functioning of R&D teams, The International Journal of Human Resource Management, 12:7, 1141-1151, DOI: 10.1080/09585190110068359

To link to this article: http://dx.doi.org/10.1080/09585190110068359

Int. J. of Human Resource Management 12:7 November 2001 1141–1151

Leadership and innovation: relations between leadership, individual characteristics and the functioning of R&D teams

J.I. Stoker, J.C. Looise, O.A.M. Fisscher and R.D. de Jong

Abstract The main focus of this paper is the functioning of R&D teams, the role of the team leader and the characteristics of individual team members. After a brief overview of recent literature on leadership and innovation, some research results are presented from a study of leadership in self-managing teams; these teams have a number of characteristics in common with R&D teams, such as dependent tasks and job autonomy. The results lead to an integrated model for the effective functioning of R&D teams, with a focus on the relations between leadership behaviour, individual characteristics, team functioning and outcome variables.

Keywords Leadership; innovation; teams; individual characteristics.

Introduction

Organizations are increasingly looking for ways to enhance their ability to innovative effectively (see Bolwijn and Kumpe, 1990; Jacobs, 1997). Within R&D departments, this means that they are looking for ways to optimize their new product development, which also tends to mean that more importance is being attached to the role of R&D teams involved in new product development. These teams are often multi-functional and multidisciplinary in their composition, and they seem to offer a way which allows organizations to cope with pressures from the external environment by providing flexibility and the ability to communicate and execute quickly.

Although the general case for teams has been made out a number of times (e.g. Katzenbach and Smith, 1994), and their functioning has been the subject of several studies (for an overview, see Campion *et al*., 1993), research on teams in the R&D field is rather limited (Paashuis, 1997). Several studies have looked at the importance of management in this context (e.g. De Weerd-Nederhof (1998) who concluded that management of innovation is not purely a matter of direct control, but also of orchestrating collective action of teams), but we know surprisingly little about either the role of the leader or the impact of the individual characteristics of team members.

The goal of this paper is to derive a research model of the functioning of R&D teams, one which emphasizes the role of the leader and individual team member characteristics. We begin with a brief discussion of the recent literature on leadership and innovation. We then move on to report our own research on leadership in self-managing

Dr J.I. Stoker, Berenschot and University of Twente, Berenschot, PO Box 8039, 3503 RA Utrecht, Netherlands; Prof. Dr J.C. Looise and Prof. Dr Ir.O.A.M. Fisscher, University of Twente; Dr R.D. de Jong, University of Utrecht.

The International Journal of Human Resource Management
ISSN 0958-5192 print/ISSN 1466-4399 online © 2001 Taylor & Francis Ltd
http://www.tandf.co.uk/journals
DOI: 10.1080/09585190110068359

teams (Stoker, 1998). Because such teams have a number of characteristics in common with R&D teams, such as dependent tasks and job autonomy, these results are likely to have relevance for R&D teams. We end with some conclusions, including an attempt to construct an integrated model of the whole process.

Theoretical background

Leadership and innovation

Innovation has been defined in several ways (for an overview, see de Leede, 1997). One of the first definitions is that of Zaltman *et al*. (1973), who say that innovation is 'any idea, practice, or material artifact perceived to be new by the relevant unit of adoption'. There are several types of innovation. Damanpour and Evan (1984), for example, distinguish between technical innovation (whether of the product or the process) and administrative innovations (whether organizational or social). In this paper, we focus on R&D teams, which means that we concentrate on product or process innovations.

Leaders of R&D teams are faced with a complex situation. On the one hand, they have to help team members to develop their own competencies. On the other, they are responsible for achieving results within time and budget constraints. Several authors claim that leadership is important for successful functioning of R&D teams and acknowledge these twin aspects (e.g. de Weerd-Nederhof, 1998), but most of the available research has focused only on the role of the leader in relation to the innovativeness of individuals (Schnake *et al*., 1993; Waldman, 1994; Janssen *et al*., 1997; Frischer, 1993; de Jong and Carpay, 1991).

The study by Janssen *et al*. (1997) of an IT organization concluded that considerate and consultative leadership correlates with empowerment of the individual employee, and that, in turn, empowerment correlates with innovative behaviour, which further correlates with effectiveness and innovativeness. Frischer (1993) found a comparable relation between the empowering manager and the perceived influence of individuals and work groups. The empowering manager was also seen to create an innovative climate in which employees became loyal to the organization.

Nederhof and Steensma (in van der Vlist *et al*., 1995) studied three leadership styles in teams with professionals. Their results suggested that team members and clients both thought that teams achieved better results when the leader pursued a consultative leadership style (van der Vlist *et al*., 1995).

De Jong and Carpay (1991) analysed the relation between leadership behaviour and R&D team outcome variables, such as team effectiveness and satisfaction. They also found that consultative leadership and a considerate leadership style correlated with the outcome variables. Teams perceived themselves as being more effective when their leader was considerate, and had a consultative leadership style and showed initiating structure. Consideration and consultative leadership were found to be relevant for job satisfaction. An interesting result was found for the connection between job satisfaction and initiating structure for the R&D teams. Initiating structure correlated negatively with job satisfaction, which suggests that employees are more satisfied with their job if their leader shows less initiating structure.

These studies of R&D teams all suggest that consultative and considerate leaders are associated with more satisfied and effective employees. None of them, however, presented evidence on the other role of the leader, that of achieving results quickly or within budget constraints. We therefore turn to studies of other types of teams, for example production teams and self-managing teams. Both the goals of such teams and

the degree of their autonomy are comparable to those of R&D teams. So the results of the research into them, and the role of leadership, seem entirely relevant for R&D teams also. We shall begin with a brief look at the theories of these teams.

Self-managing teams

Self-managing teams are responsible for some part of a production process, and they function with significant autonomy. They are used in many organizations in order to improve performance, flexibility, innovativeness and well-being of the employees (Cascio, 1995; Cohen *et al*., 1996; Hackman, 1990; Manz and Sims, 1993). Research shows that these teams indeed tend to have relatively high levels of performance and quality of life for their members in comparison to traditional groups (Cohen *et al*., 1997). However, these successes seem to be conditional on a number of factors, one of which seems to be team supervision or management (Stewart and Manz, 1995).

As the name suggests, self-managing teams are supposed to 'manage themselves'. Several ideas on the proper role of the leader have been developed (e.g. Zenger *et al*., 1994; Katzenbach and Smith, 1993; Stewart and Manz, 1995), but strong empirical data are lacking. Numerous authors claim that self-managing teams develop in different stages towards self-management, and that a leader should change his/her style in harmony with these stages (e.g. Zenger *et al*., 1994; Katzenbach and Smith, 1993; Van Amelsvoort and Scholtes, 1994; Manz and Sims, 1986, 1993; Stewart and Manz, 1995). Most of these theories claim that a self-managing team needs a directive leader when the team starts, because at that time a team needs direction. Once the team has developed and grown in maturity, however, a more consultative or coaching style from the leader is supposed to be effective (e.g. Zenger *et al*., 1994; Manz and Sims, 1984).

West (1990) and Manz *et al*. (1989) developed similar ideas within an R&D context. They claimed that the role of leadership changes during stages of innovation. According to Manz *et al*. (1989), especially visionary leadership is necessary at the beginning. After this, a leader needs to develop a participative leadership style, in order to get the employees involved. After this, the leader needs transactional leadership. So, just as with ideas on the development of self-managing teams, an R&D leader has to change his/her style according to the stage of innovation.

Other researchers claim that there has to be another fit between leadership behaviour and the context of a team (House, 1971, 1996). Instead of matching effective leadership behaviour to a stage of team development, House argues, in his path-goal theory, that a leader has to exert a style that fits not only with a team, but also with environmental characteristics and individual characteristics of team members. Research in the tradition of path-goal theory shows that indeed individual team members may differ in their reactions to various styles of leadership. This implies that, instead of considering just one leadership style effective for a team, it can be argued that more than one leadership style is effective for the functioning of teams. This is contrary to most theories on self-management, in which differences in development among teams are stressed rather than differences among team members.

It can be concluded from the above that, in theory, leaders play an important role for the effective functioning of self-managing teams. Whether effective leadership behaviour concerns just one style for a certain team, or consists of several styles dependent on, for example, individual differences between team members is not yet clear. However, regardless of whether one or more styles are effective, there are five styles that might be relevant to both performance and well-being in self-managed teams.

Traditionally, two major leadership factors are consideration and initiating structure (Stogdill and Coons, 1957). In addition, individual prominence, related to charisma (Bass, 1985, 1990), participative or consultative leadership (Mulder *et al*., 1986, Zenger *et al*., 1994; Fruytier, 1996) and coaching are mentioned as relevant for the functioning of teams (Zenger *et al*., 1994; Van Amelsvoort and Scholtes, 1994; Manz and Sims, 1986, 1993).

Individual characteristics

From research on the effectiveness and innovativeness of teams, it seems to be clear that the individual characteristics of team members are potentially relevant. Research strongly suggests that both the need and the ability of team members are important for the functioning of employees within a team. For self-managing teams, one of the relevant need-variables is need for autonomy (e.g. Emans and Radstaak, 1990; Ashkanasy and Gallois, 1994; Keller, 1989). This is the desire of a person to work autonomously, without direction from a leader. A relevant ability variable is 'self-efficacy' (Bandura, 1986). People with high self-efficacy believe that they themselves are capable of achieving results. This is related to locus of control (Rotter, 1966), but locus of control has to do with a general belief of a person in his/her own actions, whereas self-efficacy is aimed at people's working environment. There seems to be a connection between high self-efficacy and performance (Collins, 1982): people with high self-efficacy are often high performers.

Research results

Looking at more than eighty self-managing teams (with a total of more than 600 team members) in two large Dutch organizations, Stoker (1998) investigated the relationship between leadership styles, individual characteristics and outcome variables.

The two organizations differed in their main characteristics. One was a service organization (a bank, organization A) whereas the other was in the manufacturing industry (a steel company, organization B). However, they both implemented the same concept of teams based on the same theoretical background, which makes it interesting and relevant to compare the data from the two organizations. In organization A, three departments of one division participated in the research. In total, there were twenty-one teams working within these departments, with an average team size of thirteen, and an average age of the team members of 41 years. As a team leader could be the leader of between one to three teams, there were only eleven team leaders in the sample. In organization B, three factories of one division participated. There were sixty-five teams working within these factories, each with its own team leader and with an average team size of fifteen. Team members averaged 38 years of age.

Teams in both organizations were responsible for a part of the production process. In organization A they spoke of 'head-to-tail' products, and each team was responsible for a certain product line. In organization B, teams were responsible for a part of the production process, because steel production is a rather extensive process. In both organizations, jobs were interdependent, and team members shared responsibilities. Tasks were sequentially interdependent (that is, some tasks could be performed only after tasks from another team member). In all teams there was job rotation, and teams were responsible for the execution of several managerial tasks, such as day-to-day planning, quality control and maintenance.

A questionnaire was developed based on the literature on leadership and teams. It was completed by more than 600 employees. The questionnaire contained the following

leadership variables: the *consideration* and *initiating structure* scales of a Dutch translation of the Ohio-State leadership questionnaire (see Mulder *et al*., 1971); the *charismatic* leadership scale (Bass, 1985, translated into Dutch by Den Hartog *et al*., 1994) in combination with a scale that measures individual prominence (Mulder *et al*., 1971); the *consultative* leadership scale of French and Raven (translated into Dutch by Mulder *et al*., 1986); and the scale for *coaching* (De Jong and Carpay, 1991; Le Blanc, 1994), in combination with a scale that measures individualized consideration (Bass, 1985, translated into Dutch by Den Hartog *et al*., 1994). For all items a 5-point scale was used. Respondents could indicate whether an item was 'not at all' (= 1) to 'very much' (= 5) applicable to them or their leader. Two individual characteristics were measured. The need for autonomy was called *need for direction* because this description came closer to the items from the scale developed by Boumans (1990). There was also a *self-efficacy* scale from a combination of the scales of Mulder *et al*. (1986) and Le Blanc (1994). For all items the same 5-point scale was used.

Finally, the questionnaire contained four outcome variables: a scale for *organizational commitment*, based on Mowday *et al*. (1979) and Allen and Meyer (1990); a scale to measure *job satisfaction*, based on Boumans (1990) and Geersing (1984); a scale to measure *perceived team effectiveness* (de Jong, 1987); and a scale to measure *burnout*, based on a translation of the Maslach and Jackson (1986) scale (Schaufeli and van Dierendonck, 1993a, 1993b). Again, for all items the same 5-point scale was used.

Table 1 shows results from the study. Both correlations of organizations A and B are described. We also looked at possible differences in the correlations, based on the formula of Ferguson (1966: 188). Based on this it was concluded that the correlations of leadership styles and effectiveness criteria do not differ significantly (Stoker, 1998). Therefore, it can be concluded that the same leadership styles correlate with the same effectiveness criteria in both organizations. As can be seen, three of the four outcome variables correlate positively with several leadership styles. Team members experience more job satisfaction and are more committed to the organization when the team leader is seen to offer considerate, charismatic or consultative leadership. Burnout correlates with just one leadership style. Team members experience less burnout when their team leader shows consultative leadership.

In order to shed further light on which leadership styles are most effective, hierarchical regressions were performed for each of the outcome variables except for

Table 1 *Correlations between leadership styles and outcome variables for self-managing teams*

	Job satisfaction		*Organizational commitment*		*Perceived team effectiveness*		*Burnout*	
	A	*B*	*A*	*B*	*A*	*B*	*A*	*B*
Consideration	30***	.29***	.18**	.24***	.18*	.24***	−.10	−.07
Initiating structure	−.05	.07	.22**	.06	.24***	.19**	.05	−.05
Charisma	.24**	.27***	.21**	.26***	.19**	.31***	−.06	−.08
Participative	.32***	.31***	.17*	.25***	.04	.26***	−.18**	−.18**
Coaching	.06	.19***	−.01	.12*	.04	.18**	−.09	−.08

Note
Organization A = 242 employees, organisation B = 359 employees (*p< .05. **p< .01, ***p< .001, two-tailed).

Table 2 *Correlations between individual characteristics and outcome variables for self-managing teams*

	Job satisfaction		*Organizational commitment*		*Perceived team effectiveness*		*Burnout*	
	A	*B*	*A*	*B*	*A*	*B*	*A*	*B*
Need for direction	.04	.17**	.08	.21***	.11	.09	.14*	.05
Self-efficacy	.19**	.26***	.20**	.22***	.33***	.30***	−.12	−.08

Note
Organization A = 242 employees, organisation B = 359 employees (*p<.05. **p<.01, ***p<.001, two-tailed).

burnout (which correlated only with one style). The results (fully reported in Stoker, 1998) show that several leadership styles make a contribution. So, charisma and consultative leadership both help to explain the variance of organizational commitment, while consideration and consultative leadership both help to explain job satisfaction. Both initiating structure and charisma explain perceived team effectiveness. Taken together, these results show that consultative and charismatic leadership have especially strong relations with commitment, job satisfaction and perceived effectiveness.

A second set of results, shown in Table 2, relates to the relationships between the outcome variables and some individual characteristics of self-managing team members. In both organisations, the self-efficacy measure is significant related to three of the four outcome variables: those who score high on self-efficacy are committed to the organization, satisfied with their job and perceive their team to be effective. The results of organizations A and B differ for need of direction. Although some results are significant (see Table 2) one can conclude that these correlations are not as strong as the correlations between self-efficacy and outcome variables.

Finally, in order to find out whether leaders can be more effective if they adjust their style to the individual within the self-managing team, we investigated the interaction effects between leadership behaviour and individual characteristics. Table 3 shows some results, and it will be seen team members with a high need for direction were more satisfied with their job, more committed to the organization, and perceived their team to be more effective if their leader developed an initiating structure. There were no significant interaction effects between leadership styles and self-efficacy.

Table 3 *Interactions between individual characteristics, leadership styles and criteria of effectiveness*

Leadership styles and individual characteristics	*Effect*
(Initiating structure) × (high need for direction) →	More job satisfaction
(Initiating structure) × (high need for direction) →	More organizational commitment
(Initiating structure) × (high need for direction) →	More perceived team effectiveness

Note
N = 601 team members, organization A and B together.

Conclusions for the functioning of R&D teams

The results of the present study clearly suggest that leadership is important for the effectiveness of self-managing teams. For the two sets of teams studied, there are strong relations between leadership behaviour and the outcome variables, and especially strong links between charismatic and consultative leadership styles and the outcome variables.

There was also support for the notion that leaders can become more effective if they adapt their style to certain individual characteristics of team members. When a team member in a self-managing team has a high need for direction, for example, a more initiating structure seems to pay off.

These are comparable with those from other studies on the functioning of R&D teams. De Jong and Carpay (1991) showed that consultative leadership and consideration correlated strongly with the functioning of R&D teams. Janssen *et al*. (1997) found that consideration and consultative leadership correlated with empowerment of the individual employee and his/her innovative behaviour.

However, our study shows the interesting extra result that charisma is also an effective leadership style. Neither De Jong and Carpay nor Janssen *et al*. directly investigated this, but it might well be relevant for R&D teams, especially if we are concerned with the leadership task of getting the team to achieve results within time and budget constraints. It is possible that a combination of consultative leadership and charisma might be key for the effective functioning of R&D teams. The one could stimulate innovativeness, and the other could set clear goals and give direction.

Based on the results for the self-managing teams in combination with those of De Jong and Carpay and Janssen *et al*., we may question whether initiating structure and coaching are of great relevance for R&D teams. We saw in the study of De Jong and Carpay that initiating structure is ineffective for the satisfaction of R&D teams. Although it correlated positively with perceived team effectiveness, it is not obvious that this style fits for R&D teams. Probably, charisma (which correlates strongly to both initiating structure and consideration) is more effective, comparable to the results of the self-managing teams. In order to solve this, initiating structure and charisma need to be tested jointly in one study.

As is the case for self-managing teams, we think it reasonable to assume that at least two individual characteristics of team members – self-efficacy and need for direction – also play a significant role in the success of R&D teams. Although need for direction might be less present in R&D professionals, once it is there it is a very important characteristic for a leader to respond to. Self-efficacy is a variable that might be more powerfully present among R&D professionals.

In order to find out in what way the results of the self-managing teams can be translated to the functioning of R&D teams, we need empirical studies in various surroundings (e.g. R&D, product development areas, cross-functional teams) and perhaps also different organizations to confirm these assumptions. To facilitate this research, we present below an integrated model on leading R&D teams.

Building an integrated model

We now suggest the possible relations between leadership behaviour, individual characteristics, team functioning and outcome variables. Leadership behaviour is based on the five styles that were studied by Stoker (1998). It is possible that not all styles mentioned are relevant and, on the basis of earlier empirical results, we conjecture that charisma, consultative leadership and consideration will be especially important.

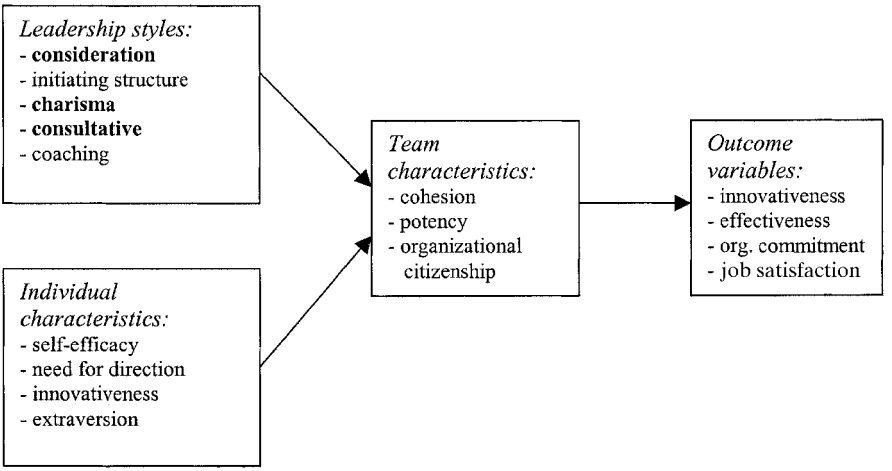


Figure 1 *Proposed relations between leadership (the most likely styles are printed in bold), individual characteristics, team characteristics and outcome variables for R&D teams*

With regard to relevant individual characteristics, we have emphasized only two qualities, namely the need for direction and self-efficacy. It is probable that there are more relevant individual characteristics for the effective functioning of R&D teams, notably individuals' innovativeness (see Howell and Higgins, 1990). This refers to the desire among individuals to find new solutions for problems. Also, it is possible that some of the big five personality characteristics are important. Thus, Barrick *et al.* (1998) report strong correlations between extraversion and conscientiousness and the effectiveness of teams.

A third group of variables that might well be relevant to the functioning of R&D teams is the team spirit or potency of a team. These were not included by Stoker but, based on the study of Janssen *et al.* (1997), they seem relevant to R&D team functioning. Potency was also one of the most powerful characteristics of a team in the studies of Campion *et al.* (1993, 1996), and similar results were found for the concept of 'organizational citizenship' (Janz *et al.*, 1997). In future research on teams, these characteristics deserve to be studied carefully.

The combination of leadership behaviour, individual characteristics and team characteristics in relation to outcome variables leads to the proposed research model shown in Figure 1.

In order to find out whether such a model can explain the effective functioning of R&D teams, three issues deserve attention. First, in order to detect causal relations, it would be highly desirable to execute longitudinal studies. We know very little about the development and dynamics of R&D teams, or about the possibly changing nature of the relationship between leaders and team functioning. It was earlier noted that West (1990) and Manz *et al.* (1989) developed ideas on the changing nature of this relationship. These ideas are comparable to the ones developed on self-managing teams. However, in both cases strong empirical support for these ideas is still lacking.

Second, it seems relevant to study the suggested relations in several organizations and across several types of R&D teams. It is plausible that there are interesting differences between, for example, cross-functional and mono-disciplinary teams. Also,

it is likely that R&D teams and their leaders across organizations differ in their nature. Even the relations within virtual R&D teams (members of which do not work at the same time or place) could be studied.

Third, we recommend that the model should be tested at both an individual and a team level. Up to now, most studies on the functioning of teams have analysed relations only at an individual level; however, more insight can be gained when both the individual and the team level are analysed at the same time.

References

Amelsvoort, P. van and Scholtes, G. (1994) *Zelfsturende teams, ontwerpen, invoeren en begeleiden* (Self-managing Teams, Design, Implementation and Guidance), 2nd edn. Oss: ST-groep.

Barrick, M.R., Stewart, G.L., Neubert, M.J. and Mount, M.K. (1998) 'Relating Member Ability to Work-Team Processes and Team Effectiveness', *Journal of Applied Psychology*, 83: 377–91.

Bolwijn, P.T. and Kumpe, T. (1990) 'Manufacturing in the 1990s: Productivity, Flexibility and Innovation', *Long Range Planning*, 23: 44–57.

Boumans, N.P.G. (1990) 'Het werk van verpleegkundigen: een onderzoek naar werkaspecten en hun invloed op verpleegkundigen' ('Nursing: A Study on Job Characteristics and their Influence on Nurses'), dissertation, University of Limburg.

Campion, M.A., Medsker, G.J. and Higgs, A.C. (1993) 'Relations between Work Group Characteristics and Effectiveness: Implications for Designing Effective Work Groups', *Personnel Psychology*, 46: 823–50.

Campion, M.A., Papper, E.M. and Medsker, G.J. (1996) 'Relations between Work Team Characteristics and Effectiveness: A Replication and Extension', *Personnel Psychology*, 49: 429–52.

Cascio, W.F. (1995) 'Whither Industrial and Organizational Psychology in a Changing World of Work?', *American Psychologist*, 50: 928–39.

Cohen, S.G., Ledford, G.E. and Spreitzer, G.M. (1996) 'A Predictive Model of Self-managing Work Team Effectiveness', *Human Relations*, 49: 643–80.

Damanpour, F. and Evan, W.M. (1984) 'Organizational Innovation and Performance: The Problem of "Organizational Lag" ', *Administrative Science Quarterly*, 29: 392–409.

Emans, B. and Radstaak, G. (1990) 'De rol van leidinggevenden bij verschillende niveaus van taakverruiming: onderzoek op een aantal verpleegafdelingen van een ziekenhuis', *Gedrag en Organisatie*, 3(5): 376–92.

Ferguson, G.A. (1966) *Statistical Analysis in Psychology and Education*. New York: McGraw-Hill.

Fisscher, O.A.M. (1986) *Wetenschap bedrijven: Onderzoek in drie researchinstellingen naar de sturing en motivatie in samenhang met de gerichtheid van het researchwerk*. Groningen: B.V. Erven B. van der Kamp.

Frischer, J. (1993) 'Empowering Management in New Product Development Units', *Journal of Product Innovation Management*, October: 393–401.

Geersing, J. (1984) *Leiding en participatie in het werk*. Groningen: Academisch proefschrift.

Hackman, J.R. (1990) *Groups That Work and Those That Don't: Creating Conditions for Effective Team Work*. San Francisco: Jossey-Bass.

House, R.J. (1971) 'A Path Goal Theory of Leadership Effectiveness', *Administrative Science Quarterly*, 16: 321–8.

House, R.J. (1996) 'Path-Goal Theory of Leadership: Lessons, Legacy, and a Reformulated Theory', *Leadership Quarterly*, 7(3): 323–52.

Howell, J.M. and Higgins, C.A. (1990) 'Champions of Technological Innovation', *Administrative Science Quarterly*, 3: 317–341.

Janssen, O., Schoonebeek, G. and Van Looy, B. (1997) 'Cognities van empowerment als de schakel tussen delegerend leiderschap en innovatief gedrag van werknemers', *Gedrag en Organisatie*, 10: 175–94.

Janz, B.D., Colquitt, J.A. and Noe, R.A. (1997) 'Knowledge Worker Team Effectiveness: The Role of Autonomy, Interdependence, Team Development, and Contextual Support Variables', *Personnel Psychology*, 50: 877–904.

Jong, R.D. and Carpay, M. (1991) 'Leadership Style and Group Member's Mood, Job Satisfaction and Effectiveness'. Paper presented at the Fifth European Congress on Psychology of Work and Organization, Rouen, France, 24–7 March.

Katzenbach, J.R. and Smith, D.K. (1993) *The Wisdom of Teams: Creating the High-performance Organization*. Boston, MA: Harvard Business School Press.

Le Blanc, P.M. (1994) *De steun van de leiding* (Support of Leaders). Amsterdam: Thesis Publishers.

Leede, J. de (1997) *Innoveren van onderop: Over de bijdrage van taakgroepen aan product- en procesvernieuwing*. Deventer: Kluwer.

Loher, B.T., Noe, R.A., Moeller, N.L. and Fitzgerald, M.P. (1985) 'A Meta-analysis of the Relation of Job Characteristics to Job Satisfaction', *Journal of Applied Psychology*, 70: 280–9.

Manz, C.C. and Sims, H.P. (1986) 'Leading Self-Managed Groups: A Conceptual Analysis of a Paradox', *Economic and Industrial Democracy*, 7: 141–65.

Manz, C.C. and Sims, H. (1993) *Business without Bosses: How Self-managing Teams Are Building High Performance Companies*. New York: Wiley.

Manz, C.C., Bastien, D.T., Hostager, T.J. and Shapiro, G.L. (1989) 'Leadership and Innovation: A Longitudinal Process View'. In van de Ven, A.H., Angle, H.L. and Scott Poole, M. (eds) *Research on the Management of Innovation: The Minnesota Studies*. New York: Harper & Row, pp. 613–36.

Maslach, C. and Jackson, S.E. (1986) *MBI: Maslach Burnout Inventory: Manual Research Edition*, 2nd edn. Palo Alto, CA: Consulting Psychologists Press.

Mowday, R.T., Steers, R.M. and Porter, L.W. (1979) 'The Measurement of Organizational Commitment', *Journal of Vocational Behavior*, 14: 224–7.

Mulder, M., Ritsema van Eck, J.R. and Jong, R.D. de (1971) 'An Organization in Crisis and Non-crisis Situations', *Human Relations*, 24: 19–41.

Mulder, M., Jong, R.D. de, Koppelaar, L. and Verhage, J. (1986) 'Power, Situation and Leader's Effectiveness: An Organizational Field Study', *Journal of Applied Psychology*, 71: 566–70.

Paashuis, V.J.B.J. (1997) 'The Organization of Integrated Product Development', dissertation, University of Twente.

Rotter, J.B. (1966) 'Generalized Expectancies for Internal versus External Control of Reinforcement', *Psychological Monographs*, 80: 1–28.

Schaufeli, W.B. and Van Dierendonck, D. (1993a) *Burnout, een begrip gemeten: De Nederlandse versie van de Maslach Burnout Inventory* (Burnout, the Measurement of a Construct: The Dutch Version of the Maslach Burnout Inventory). Nijmegen: Catholic University of Nijmegen (internal publication of the department of Work and Organizational Psychology).

Schaufeli, W.B. and Van Dierendonck, D. (1993b) 'The Construct Validity of Two Burnout Measures', *Journal of Organizational Behavior*, 14: 631–47.

Schnake, M., Dumler, M.P. and Cochran, D.S. (1993) 'The Relationship between "Traditional" Leadership, "Super" Leadership and Organizational Citizenship Behavior', *Group and Organization Management*, 18: 352–65.

Stewart, G.L. and Manz, C.C. (1995) 'Leadership for Self-managing Work Teams: A Typology and Integrative Model', *Human Relations*, 48: 747–70.

Stoker, J.I. (1998) *Leidinggeven aan zelfstandige taakgroepen* (Leading Self-managing Teams). Assen: Van Gorcum (dissertation).

Vlist, R. van der, Steensma, H., Kampermann, A. and Gerrichhauzen, J. (eds) (1995) *Handboek leiderschap in arbeidsorganisaties*. Utrecht: Lemma.

Waldman, D.A., Bass, B.M. and Yammarino, F.Y. (1990) 'The Augmenting Effect of Transformational Leadership'. In Clark, K.E. and Clark, M.B. (eds) *Measures of Leadership*. West Orange: Leadership Library of America.

Weerd-Nederhof, P.C. de (1998) 'New Product Development Systems, Operational Effectiveness and Strategic Flexibility', dissertation, University of Twente.

West, M.A. (1990) 'The Social Psychology of Innovation in Groups'. In West, M.A. and Farr, J.L. (eds) *Innovation and Creativity at Work*. Chichester: Wiley, pp. 309–33.

Zaltman, G., Duncan, R. and Holbek, J. (1973) *Innovations and Organizations*. New York: Wiley.

Zenger, J.H., Musselwhite, E., Hurson, K. and Perrin, C. (1994) *Leading Teams: Mastering the New Role*. Homewood, IL: Business One Irwin.